

REMARKS

A. Background

Claims 37-76 were pending in the application at the time of the Office Action. Claims 37-76 were rejected to as being anticipated by and/or obvious over cited art. By this response applicant has canceled claims 46, 53, 60, 67, and 74; amended claims 37, 47, 49, 54, 56, 61, 63, 68, 70, and 75; and added new claims 77-97. As such, claims 37-45, 47-52, 54-59, 61-66, 68-73, and 75-97 are presented for the Examiner's consideration in light of the following remarks.

B. Proposed Claim Amendments

Applicant has herein amended independent claims 37, 49, 56, 63, and 70 to respectively incorporate the limitations of claims 46, 53, 60, 67, and 74, which previously depended therefrom, and to clarify that "the second laser is a semiconductor laser and the first laser oscillates in a multimode." Claims 47, 54, 61, 68, and 75 have been amended to take into account the amendments made to the independent claims and to address formal matters. Applicant has also added new claims 77-97. Applicant submits that the new claims and the amendments to the existing claims are supported by prior pending claim language and by the application as originally filed. In view of the foregoing, applicant respectfully submits that the amendments to the claims do not introduce new matter and entry thereof is respectfully requested.

C. Rejection based on 35 USC § 102

Paragraphs 3-8 of the Office Action reject claims 37-41 and 43-45 under 35 USC § 102(e) as being anticipated by U.S. Patent Application Publication No. 2004/0027648 to Furukawa et al. ("*Furukawa*"). Of the rejected claims, claim 37 is the sole independent claim. Applicant respectfully traverses this

traverses this rejection.

As noted above, Applicant has amended independent claim 37 to incorporate the limitations of prior claim 46. As discussed below in relation to the obviousness rejection of claim 46, the Office Action has conceded that *Furukawa* does not disclose all the limitations of claim 46. Because those limitations are now included in amended independent claim 37, Applicant submits that claim 37, as well as corresponding dependent claims 38-41 and 43-45 are not anticipated by *Furukawa*. Accordingly, Applicant respectfully requests that the anticipation rejection with respect to claims 37-41 and 43-45 be withdrawn.

D. Rejections based on 35 USC § 103

Paragraphs 9-26 of the Office Action reject claims 42, 49-52, 56-59, 63-66, and 70-73 under 35 USC § 103(a) as being obvious over *Furukawa*. Paragraphs 27-44 of the Office Action reject claims 46-48, 53-55, 60-62, 67-69, and 74-76 under 35 USC § 103(a) as being obvious over *Furukawa* in view of U.S. Patent No. 5, 796, 764 to Corsini et al. (“*Corsini*”) and, for some of the claims, further in view of U.S. Patent No. 5,012,478 to Hattori et al. (“*Hattori*”). Of the rejected claims, claims 49, 56, 63, and 70 are independent claims. Applicant respectfully traverses these rejections and notes that the discussion set forth below also applies to amended independent claim 37 and the claims that depend therefrom.

Independent claims 37, 49, 56, 63, and 70 have respectively been amended to incorporate the limitations of prior claims 46, 53, 60, 67, and 74. As such, each independent claim recites, among the other limitations of the respective claims, “two polarization maintaining fibers coupled to outputs of the first and second lasers, respectively; and a multiplexer for multiplexing outputs of the two polarization maintaining fibers and coupling a multiplexed output to the nonlinear optical crystal.” The Office Action

The Office Action concedes that *Furukawa* fails to teach these limitations and points to *Corsini* to remedy this deficiency of *Furukawa*. See paragraph 28 of the Office Action. Applicant respectfully submits, however, that a *prima facie* case of obviousness has not been established because the Office Action has failed to establish a sufficient suggestion or motivation to combine the art.

Furukawa is directed to an optical wavelength converting apparatus that includes a first semiconductor laser (LD) 111 and a wavelength converting element 113 arranged between a pair of resonator mirrors so as to form an external resonator structure 115. See Figure 1 and ¶ 0035. As such, the first laser light 112 emitted by the first semiconductor LD 111 reciprocates between the two resonator mirrors through the first semiconductor LD 111 and the wavelength converting element 113. The second semiconductor laser (LD) 117 is disposed outside the external resonator 115. Second laser light 118 from the second semiconductor LD 117 is directed into the wavelength converting element 113 so as to generate a sum frequency light 119. See ¶ 0035.

Corsini discloses a pump light source 22 that feeds pumping light through an optical waveguide 23 (which the Office Action equates to the claimed “polarization maintaining fiber”) into a wavelength division multiplexer (WDM) 41 (which the Office Action equates to the claimed “multiplexer”). The multiplexed signal is fed through a second optical waveguide 44 into a grating reflector 24 and then to a waveguide 28 within a doped substrate 26. See col. 6, lines 16-23. *Corsini* discloses that “WDM 41 simply passes the pumping energy from line 23 to line 44 toward doped substrate 26.” Col. 6, lines 54-56, *emphasis added*. In other words, the pumping laser light is only passed in one direction through WDM 41.

Applicant submits that there is no reason one of ordinary skill would be motivated to add the WDM of *Corsini* to *Furukawa* in the manner set forth in the Office Action. In order to even arguably read on the rejected claims, the WDM of *Corsini* would need to be inserted between the wavelength converting

converting element 113 and the first and second semiconductor LDs 111 and 117 of *Furukawa*. However, as noted above, the first laser light 112 emitted by the first semiconductor LD 111 of *Furukawa* reciprocates between the two resonator mirrors through the first semiconductor LD 111 and the wavelength converting element 113. Because the WDM only passes the inputted light in one direction, a WDM added to the output of first semiconductor LD 111 of *Furukawa* would allow the first laser light 112 to pass from the first semiconductor LD 111 to wavelength converting element 113 but would prevent the light from returning in the opposite direction. Thus, the WDM would prevent the first laser light 112 from resonating. As a result, the allegedly obvious modification to *Furukawa* would thus either change the principle of operation of *Furukawa* or render the *Furukawa* apparatus unsatisfactory for its intended purpose. According to patent examination rules, either of these results precludes a finding of obviousness. See *MPEP 2143.01*.

In view of the foregoing, Applicant submits that the Office Action has failed to establish a *prima facie* case of obviousness because the Examiner has failed to establish a suggestion or motivation to combine reference teachings. Accordingly, Applicant respectfully submits that none of the pending claims is made obvious by the allegedly obvious combination of *Furukawa* and *Corsini*, and requests that the obviousness rejection of claims 42 and 46-76 be withdrawn.

No other objections or rejections were set forth in the Office Action.

E. New Claims

Applicant submits that new claims 77-97 are distinguished over the cited art of record. For example, each of independent claims 77, 80, 83, 86, 89, 92, and 95 recite “two polarization maintaining fibers coupled to outputs of the first and second lasers, respectively; and a multiplexer for multiplexing outputs of the two polarization maintaining fibers and coupling a multiplexed output to the nonlinear

the nonlinear optical crystal.” As discussed above, none of the cited art, alone or in combination, teach these limitations.

Furthermore, claims 78, 79, 81, 82, 84, 85, 87, 88, 90, 91, 93, 94, 96, and 97 variously depend from independent claims 77, 80, 83, 86, 89, 92, and 95 and are thus further distinguished over the cited art for at least the same reasons discussed above regarding claims 77, 80, 83, 86, 89, 92, and 95.

E. Conclusion

Applicant notes that this response does not discuss every reason why the claims of the present application are distinguished over the cited art. Most notably, applicant submits that many if not all of the dependent claims are independently distinguishable over the cited art. Applicant has merely submitted those arguments which it considers sufficient to clearly distinguish the claims over the cited art.

In view of the foregoing, applicant respectfully requests the Examiner’s reconsideration and allowance of claims 37-45, 47-52, 54-59, 61-66, 68-73, and 75-97 as amended and presented herein.

In the event there remains any impediment to allowance of the claims which could be clarified in a telephonic interview, the Examiner is respectfully requested to initiate such an interview with the undersigned.

DATED this 5th day of September 2007.

Respectfully submitted,

/Scott A. Woodbury/ Reg. #55743
SCOTT A. WOODBURY
Registration 55,743

DANA L. TANGREN
Registration No. 37,246

Attorneys for Applicant
Customer No. 022913
Telephone No. 801.533.9800

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